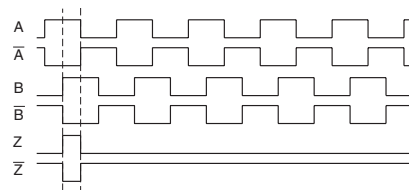


# Incremental Encoder

## Model: FOI58



- Robust mechanical construction, high vibration and shock resistance
- 1 to 16,384 pulses/ revolution
- Operating temperature - 40 °C to + 85 °C
- Protection grade IP 65



### Design and function

Sensing the angle position with magnetic sensor and signal processing including the generation of the pulse outputs.

Robust housing made of steel with a coating for corrosion protection and flange made of sea water proof aluminium (AlMgSi1).

Shaft in stainless steel. Bearings with shaft sealing ring.

- Number of pulses/ revolution: Each pulse number from 1 to 16,384 pulses / revolutions
- Signal outputs: Channel A, B and Zero Z and inverted signals
- Form of signals: Square (Duty cycle 1:1)

# Incremental Encoder FOI58

## Technical Data

### Electrical data

- Sensor system: Magnetic
- Supply voltage range: + 4.75 VDC to + 30 VDC (protection against reverse polarity)
- Power consumption: ≤ 40 mA (24 VDC)
- Output Voltage High level push pull (HTL): > 4 V @ supply voltage  $V_S$  4.75 – 9 V  
>  $V_S - 3$  V @ supply voltage  $V_S$  9 – 30 V
- Output Voltage Low level push pull (HTL): < 0.5 V
- Output Voltage High Level RS422 (TTL): > 4 V
- Output Voltage Low Level RS422 (TTL): < 0.5 V
- Maximum load of output signal: 120  $\Omega$  (50 mA for each channel)
- Reverse polarity protection: yes
- Short circuit protection: yes
- Reference signal: Zero pulse, width 90°  
(180°, 270°, 360° optional)
- Output frequency: max. 1 MHz
- Phase accuracy: 90° ± 14°
- Accuracy: ±0.0878° (≤ 12 Bits)
- Signal output: A+ and B+ (90° shifted) and Z+. Additionally inverted signals A-, B- and Z-
- Output circuit: Linedriver / RS 422  
Push-pull short-circuit proof
- EMC-Standards: EN 61000-6-2 (ESD)  
EN 61000-6-4 (Emission)
- Approval: CE
- MTTF: 280 years @ 40°C

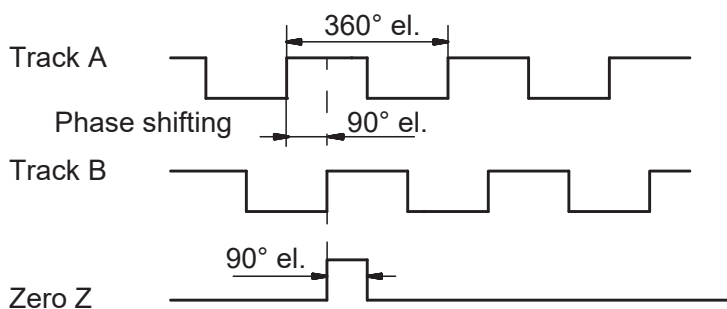
### Mechanical data

- Operating speed: ≤ 12,000 rpm
- Resolution: 1 to 16,384 (steps/turn)
- Starting torque: ≤ 0.03 Nm
- Dimensions (flange):  $\varnothing$  58 mm
- Perm. shaft load: ≤ 40 N axial  
≤ 110 N radial
- Bearings lifetime: 2x10<sup>9</sup> rev. at 100 % of full rated shaft load (minimum)
- Material: Flange (aluminium), housing (steel with coating for corrosion protection),  
shaft (stainless steel)
- Mass: ca. 215 g

### Environmental data

- Operating temperature: - 40 °C to + 85 °C
- Humidity: 98 % without condensation
- Resistance
  - To shock: 1,000 m/s<sup>2</sup>, 6 ms, DIN EN 60068-2-27
  - To vibration: 100 m/s<sup>2</sup>, 10 Hz ... 1,000 Hz DIN EN 60068-2-6
- Protection grade IP65

### Signal output when CW turning (view on shaft)



# Incremental Encoder FOI58

## Order code format

FOI	58	S6	1	1	A	1024	R	6	T	01
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### Electrical and mechanical variants

#### Signal form:

- T TTL (see electrical data page 2)
- H HTL (see electrical data page 2)

#### Output signal:

- 2 A+, B+
- 3 A+, B+, Z+
- 4 A+, B+, A-, B-
- 6 A+, B+, Z+, A-, B-, Z-

#### Shaft rotation:

- R CW
- L CCW

#### Pulses:

1024 Pulses / 360° (1 ... 16,384)

#### Housing material:

- A Aluminium (AlMgSi1)

#### Electrical connection:

- 1 M23 Connector, 12 pin, CCW (matching cable see page 7)

#### Protection grades:

- 1 IP 65

#### Flange type:

- S6 Synchro flange, shaft 6 mm (see page 4)
- K10 Clamping flange, shaft 10 mm (see page 5)
- B12 Blind hollow shaft, clamped ring 12 mm (see page 6; 10, 8 mm blind hollow shaft see reducing bushes page 6)

#### Design form:

- 58 Case diameter  $\varnothing$  58 mm

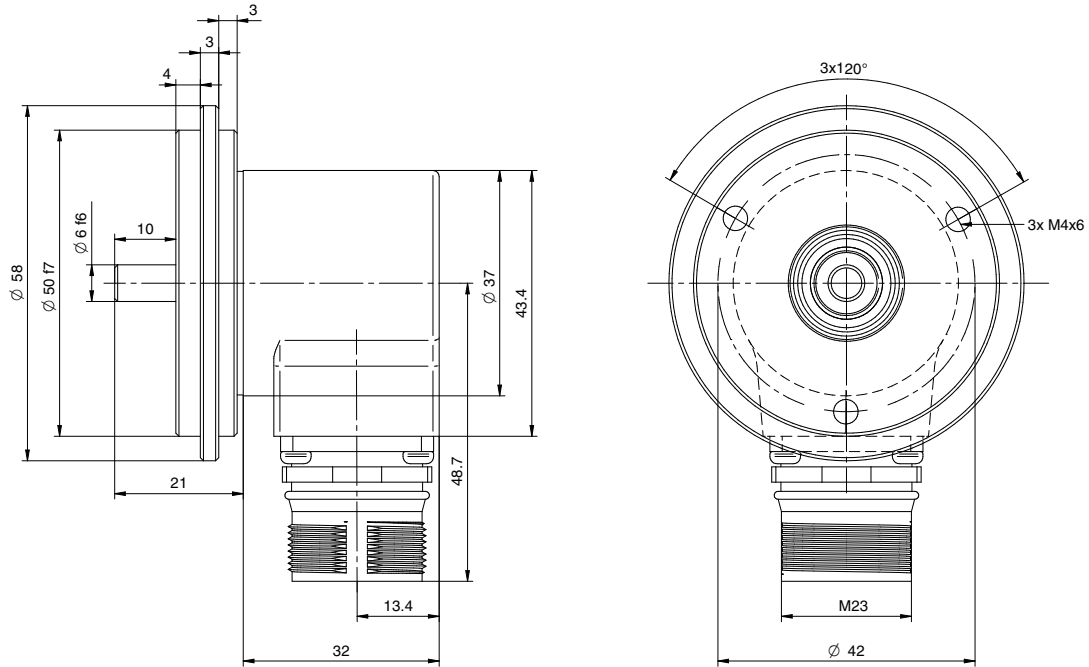
FOI Incremental encoder

# Incremental Encoder FOI58

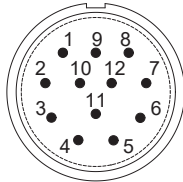
## Installation drawings

Dimensions in mm

### Model FOI58S6 (M23-Connector, radial)



### Electrical connection (view to contacts)



M 23 Connector, 12 pin

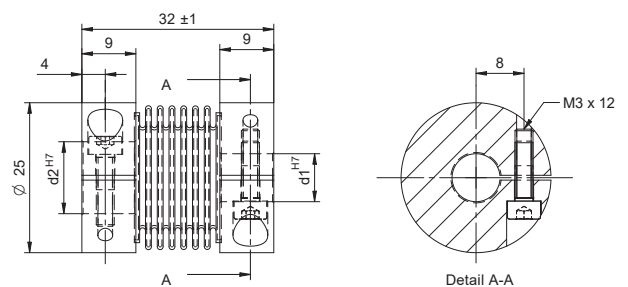
Contact no.	M23-Connector
1	B- Channel
3	Z+ Channel, Zero signal
4	Z- Channel, Zero signal
5	A+ Channel
6	A- Channel
8	B+ Channel
10	GND
12	+Vs
Shielding	Connector housing

## Accessories

### Bellow coupling

- BKA 32/6-6-A01:** d2 =  $\varnothing$  6 mm, d1 =  $\varnothing$  6 mm
- BKA 32/6-8-A01:** d2 =  $\varnothing$  6 mm, d1 =  $\varnothing$  8 mm
- BKA 32/6-10-A01:** d2 =  $\varnothing$  6 mm, d1 =  $\varnothing$  10 mm

Dimensions in mm



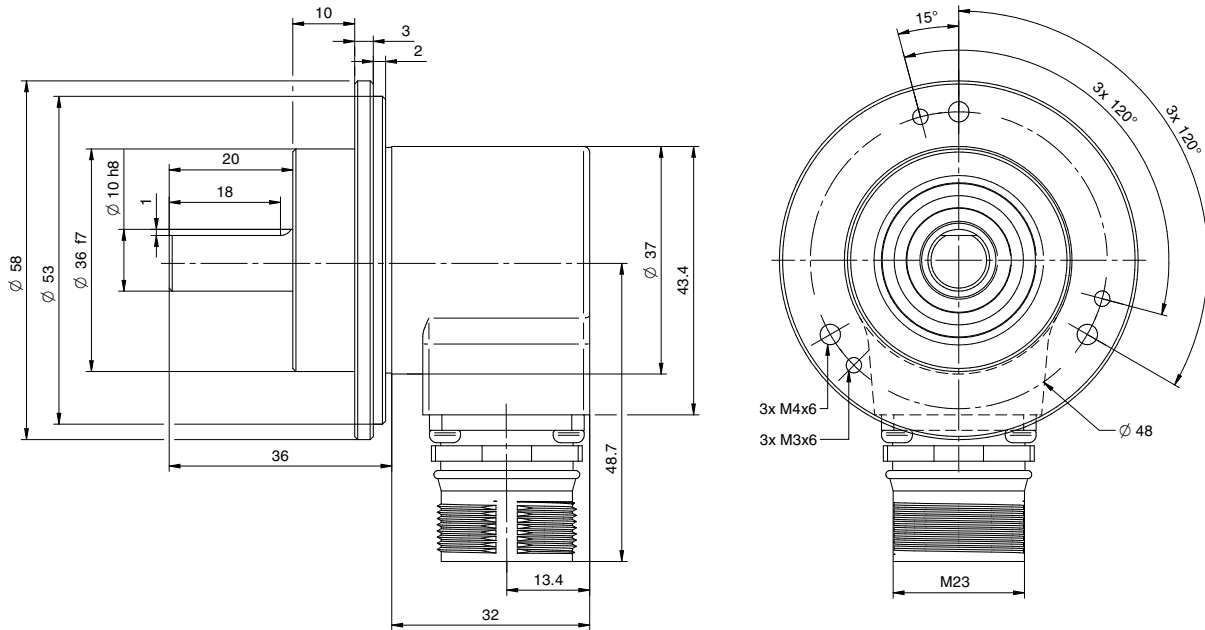
For more information see data sheet [BKA 15029](#).

# Incremental Encoder FOI58

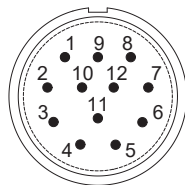
## Installation drawings

Dimensions in mm

### Model FOI58K10 (M23-Connector, radial)



### Electrical connection (view to contacts)



M 23 Connector, 12 pin

Contact no.	M23-Connector
1	B- Channel
3	Z+ Channel, Zero signal
4	Z- Channel, Zero signal
5	A+ Channel
6	A- Channel
8	B+ Channel
10	GND
12	+Vs
Shielding	Connector housing

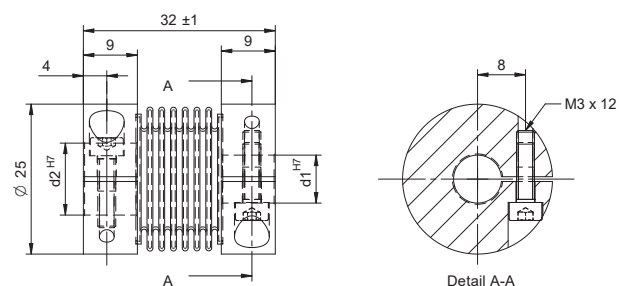
## Accessories

### Bellow coupling

**BKA 32/10-10-A01:** d2 =  $\varnothing$  10 mm, d1 =  $\varnothing$  10 mm

**BKA 32/10-12-A01:** d2 =  $\varnothing$  10 mm, d1 =  $\varnothing$  12 mm

Dimensions in mm



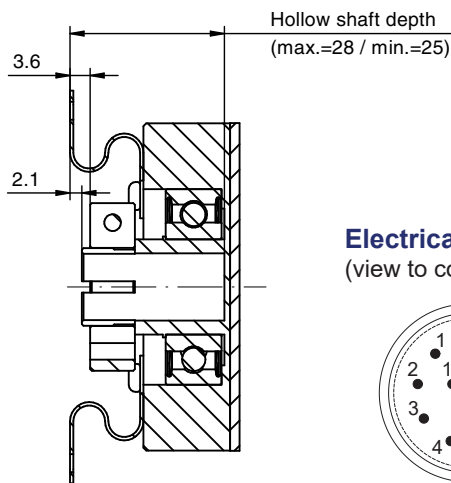
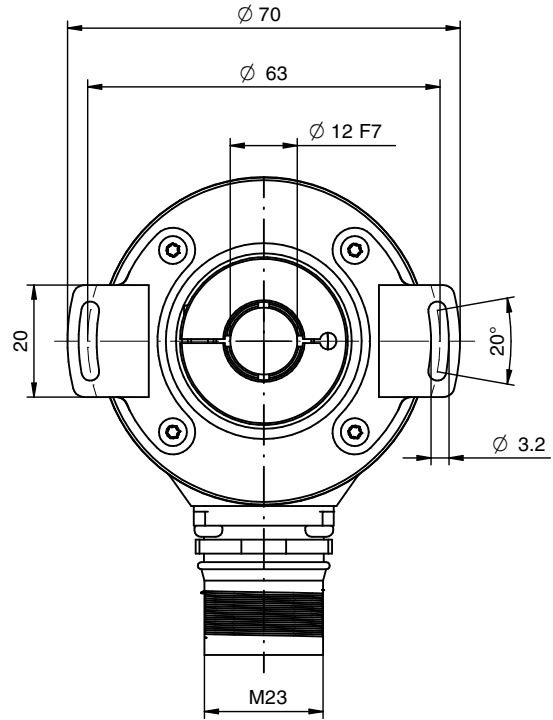
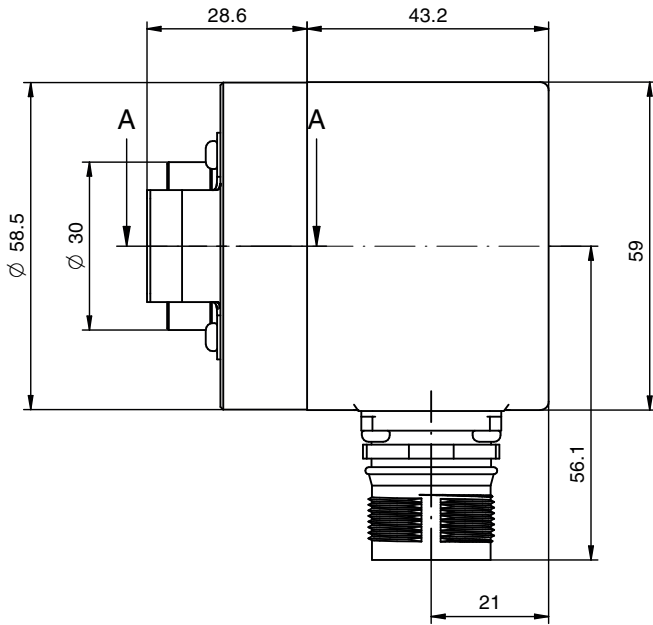
For more information see data sheet [BKA 15029](#).

# Incremental Encoder FOI58

## Installation drawings

Dimensions in mm

### Model FOI58B12 (M23-Connector, radial)



**Electrical connection**  
(view to contacts)

Details A-A

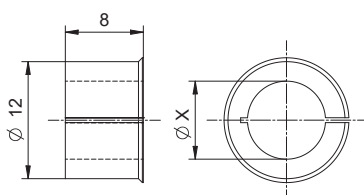
Contact no.	M23-Connector
1	B- Channel
3	Z+ Channel, Zero signal
4	Z- Channel, Zero signal
5	A+ Channel
6	A- Channel
8	B+ Channel
10	GND
12	+Vs
Shielding	Connector housing

## Accessories

### Reducing bush (Material: aluminium)

ZRH-A-12-10: x = 10 mm

ZRH-A-12-8: x = 8 mm



ZRH-A-12-10



ZRH-A-12-8

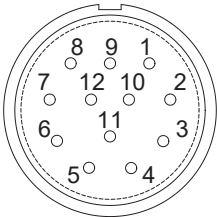


# Incremental Encoder FOI58

## Accessories

### Cable

- Type of cable: PVC-Cable 6x2x0, 14 mm<sup>2</sup> with open wire end
- Cable configuration: 6x2x0,14 mm<sup>2</sup> AWG 26
- Cable outside diameter: 6 - 10 mm
- Protection grade IP 67

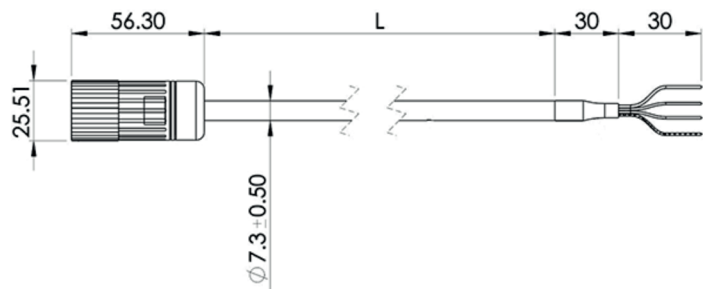


M 23 Connector, 12 socket

Encoder (FOI) signal	M23-Connector	Color
B invers	1	yellow
	2	green
Zero	3	grey
Zero invers	4	pink
A	5	blue
A invers	6	red
	7	black
B	8	grey/pink
	9	blue/red
GND	10	violet
	11	brown
Vs	12	white

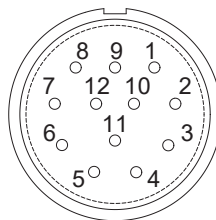
### Order code format

Kabel - X - 222
<b>Cable length:</b>
2 2000 mm (L)
5 5000 mm (L)
10 10.000 mm (L)



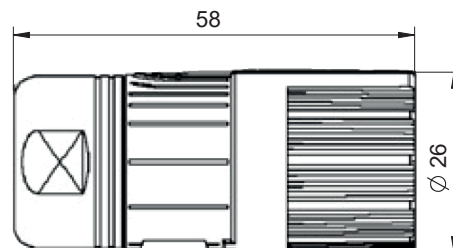
### Mating plug M23

- Mating plug M23 with 12 sockets for incremental encoder series FOI
- With strain relief and shielding
- For cable with Ø 4.5 - 8.5 mm
- Contacts: Brass, gold-plated



### Order code format

- Connector: STR12GS27



For more information see data sheet STR15102